GMI
Core Modeling Activities Status Report
May 24, 2004

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I. Personnel
II. Status of the Models
III. Model Output & Access
IV. GMI Web Page

I. Personnel – Core Model Team at GSFC

- GMI Computing – Code 931 (Tom Clune)
  - Bigyani Das – debugs and executes tropospheric and aerosol simulations; manages their outputs.
  - Jules Kouatchou – will manage stratospheric and strat-trope model production. He is the lead for software documentation and analysis of code structure. He has ported the code to other machines and benchmarked it.
  - Hamid Oloso – will design and implement structural modifications to code; code optimization. Hamid supplements the GMI staff as needed, presently working with Jules.
  - Darcy Herman – Web site development and maintenance
  - Dan Bergmann (LLNL) – consulting, as needed

I. Personnel – Core Model Team at GSFC

- Science Evaluation – Code 916 (Susan Strahan)
  - Steve Steenrod – stratospheric model modifications, input preparation, and experiments
  - Chris Readinger – model output post-processing using VCDAT, python, and IDL
  - Bryan Duncan – tropospheric model development & evaluation

II.A. Tropospheric Model: Status and Simulations

- Synthetic Tracers (Bio Burning CO, Transcom CO_2, and CH_3I)
  - For analysis of tropospheric transport (all met fields)
  - For comparisons with UCI-CTM with GISS winds
- Radionuclide Simulations/Boundary Layer Mixing
  - Improved Radon source
  - Experiments with K_{zz} (DAO and CCM3)
- Modifications to the full chemistry model
  - NO_y chemistry error corrected
  - New stratospheric lifetimes for CO & some HCs
  - Wet scavenging error corrected
  - Numerous new reaction rates, isoprene scaling, and more
  - All the above modifications = the new 'standard' version of the tropospheric model

II.B. Aerosol Model: Status & Simulations

- Simulations with DAO Met Fields (and Michigan inputs)
  - Simulation from Fall, 2003 was redone after wet scavenging error was discovered in January
  - Chris Readinger has developed scripts to make a series of standardized plots of the aerosol species
- Simulations with CCM3 Met Fields (and Michigan inputs)
  - Completed in April, just before NCCS went down. No access to these results yet.
- To do when halem returns
  - Evaluate CCM3 simulation
  - Restructure aerosol model and inputs to run 1 year at a time; currently only 1 month simulations possible.
  - Test model using monthly-averaged inputs from DAO and CCM3 tropospheric simulations. Unlike the original plans to use hourly inputs, this requires no recoding of existing aerosol input format.

II.C. Stratospheric Model: Status & Simulations

- To Date
  - The model now runs at 2x2.5^{o} horiz resolution.
  - One year full chemistry takes about 1 day.
  - Lower stratospheric transport MUCH improved over 4x5^{o} version.
  - Reaction rates have been updated to JPL2002.

- Coming up next…the Hindcast Simulation (1975-2005)
  - Steve Steenrod has been preparing 2x2.5^{o} input files (winds, source gases, aerosols, solar cycle, etc.)
  - When halem returns, we will be nearly ready to run.

II.D Combined Troposphere-Stratosphere Model

- Development has begun
  - Peter Connell has delivered the combined mechanism (strat + tropo chemistry).
  - David Considine is writing a shell to interface the Langley mechanism and solver to the model (through a namelist option).
  - Hamid Oloso is working on implementing Fast J2.

- Chemistry 'bake-off': benchmark the performances of the LLNL combined mechanism/SMVGEAR and the LaRC mechanism/solver.

III. Model Output & Access

- The GMI archive is now available in its entirety via anonymous ftp to dirac.
  - Eliminates access problems for people without NCCS accounts

- Software to open, read, and plot model output files are described on the GMI home page (Duncan).
  - Websites for downloading free software packages are given (e.g., VCDAT, GEOV).
  - IDL programs to open and extract fields from netcdf files are available from GSFC.

III. Model Output & Access (cont'd)

- A GMI Bulletin Board has been established.
  - You can get to the bulletin board from the GMI home page
  - You can access it directly at http://gest.umbc.edu/gmi/
  - It's private (see me for userid & password)
  - Use it to post plots and analyses for viewing by GMI science team members

IV. GMI Web Site: http://gmi.gsfc.nasa.gov

- Better developed than 6 months ago, but still incomplete
  - Need tropospheric model text
  - Need aerosol model text
- Pass-protected bulletin board is available
- Meeting info, presentations, status reports, and submitted manuscripts can be downloaded
- In preparation for the upcoming NRA, pages on model descriptions and GMI research needs to be finished.

And finally….

- If you are giving a presentation at this meeting (*.ppt, *.doc, *.pdf, etc), or
- If you have plots or analyses you wish to have posted to the Bulletin Board, please send them to

strahan@code916.gsfc.nasa.gov